MICRO WELD

MODEL AD 6-10
HEAVY DUTY
NON-FERROUS

BUTT WELDERS

MICRO PRODUCTS COMPANY

SERVICE MANUAL

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SPECIFICATIONS	**MODEL AD-6**
Welding Range Copper Wire	.550 to 1.000 in. dia.
Welding Range Aluminum Wire	.625 to 1.375 in. dia.
Welding Range Copper Conductors	in. dia. 250MCM to 1000MCM
Welding Range Aluminum Conductors	in. dia. 400MCM to 1250MCM
Maximum Line Demand 460 Volt	584 amps@100% duty cycle 1306 amps@20% duty cycle
Maximum Line Demand 575 Volt	467amps@100% duty cycle 1044amps@20% duty cycle
Single Phase AC Transformer	380 KVA @ 50% duty cycle
Clamp Method Upset Method	Pneumatic, Foot Controlled Pneumatic, Adjustable
Mounting	4-Caster Wheels

Dimensions and Weights

Height Overall	50 in.
Floor Space	85 in. x 40 in.
Welding Die Height	44 in.
Weight	4800LBS

SPECIFICATIONS	**MODEL AD-8**	**MODEL AD-10**
Welding Range Copper Wire	.550 to 1.125 in. dia.	.500 to 1.300 in. dia.
Welding Range Aluminum Wire	.750 to 1.750 in. dia.	.500 to 1.750 in. dia.
Welding Range Copper Conductors	in. dia. 250MCM to 1250MCM	.500 to 1.600 in. dia.
Welding Range Aluminum Conductors	in. dia. 500MCM to 2000MCM	.500 to 1.750 in. dia.
Maximum Line Demand 460 Volt	784amps@100% duty cycle 1569amps@25% duty cycle	784amps@100% duty cycle 2000amps@15% duty cycle
Maximum Line Demand 575 Volt	627amps@100% duty cycle 1255amps@25% duty cycle	627amps@100% duty cycle 1600amps@15% duty cycle
Single Phase AC Transformer	510 KVA @ 50% duty cycle	510 KVA @ 50% duty cycle
Clamp Method Upset Method	Pneumatic, Foot Controlled Pneumatic, Adjustable	Pneumatic, Foot Controlled Pneumatic, Adjustable
Mounting	4-Caster Wheels	4-Caster Wheels

Dimensions and Weights

Height Overall	50 in.	50 in.
Floor Space	85 in. x 40 in.	85 in. x 40 in.
Welding Die Height	44 in.	44 in.
Weight	5400 LBS	5400 LBS

FEATURES

- Micro Weld quality and workmanship
- Heavy-duty construction & components
- Easy to operate controls
- Low maintenance costs
- Easy to set welding parameters
- Safety electrical switch circuits
- Heavy-duty weld heat selection switch
- Sensitive straight slide movable headpiece assembly

2.0 GENERAL OPERATING INSTRUCIONS

2.1 ELECTRICAL HOOK-UP INSTRUCTIONS

First determine that available electrical service in your plant corresponds to the nameplate rating located on welder housing. Electrical wiring to welder must be of sufficient size to deliver full ampere load with no appreciable loss during weld cycle. The welder will not operate properly if there is more than a 10% variation in the line voltage. In general, the welder should be fused with a slow blow fuse of the 100% duty cycle rating. The minimum power cable size to the welder can be obtained by using this same current rating.

Refer to National Electrical Code and local electrical regulations for adequate power sizes; disconnect methods and fusing guidelines.

Remember, line voltages to the welding machine are potentially dangerous should the power cords be damaged or severed. The welding voltages at the welding dies will not harm an operator since they do not exceed 10 volts.

2.2 SAFETY PRECAUTIONS
(See section 11.0)

2.2.1 ELECTRICAL

Maintain electrical cable to welder in good repair. Welder must be grounded and connections securely tightened. Heat Switch must not be changed to new position while a weld cycle is in process. Disconnect electrical service before serving welder – high voltages are located within the base of the welder.

2.2.2 MECHANICAL

Operator while using welder must wear safety glasses. Keep all safety guards on welders and use properly. Operators must be instructed on basic operation of unit to prevent injury. Check nameplate rating and keep within material size range for each welder.

2.3 WATER HOOK-UP
(If so equipped)

It is important that if a welder is to be operated for an extended period of time and head heat up, water lines must be connected to the welder. Connect hoses to inlet and outlet provided at the back of the welder. Shut-off valve should be installed in the inlet line and the hose from the outlet should run to an open sight drain. Water should be turned off when welder is not in use.

2.4 AIR HOOK-UP

Set air regulators for from 20 to 90 lbs. A safety pop-off valve will be activated when air gauge is set for over 100 lbs.

2.5 WELDING DIES

The dies and shoes supplied with the welder will handle most size and material types within the range of the welder. For new weld applications consult the factory for special die and shoe sets.

3.0 BASIC OPERATING PARTS

3.1 MODEL AD-6 or 8

3.1.1 WELD HEAT SELECTION SWITCH

The AD-6 welding heat is selected by means of a heavy-duty Tap switch with 8 steps of voltage. Number 1 indicates the highest heat setting and the number 8 indicates the lowest heat setting. Other numbers are equally graduated from highest to low to allow just the right amount of voltage for the weld operation.

The type of heat switch found on the AD-6 has a safety switch that must be depressed before turning to a new heat. This safety switch actually is wired into the control circuit, and when the heat switch is between settings will prohibit the welder welding.

3.2.1 The AD-8 welding heat is selected by means of an SCR control mounted on the side of the welder. A potentiometer located on the control front panel with a scale designating 0-100%. 0% is the lowest heat setting. 100% is the highest heat setting.

3.2.2 CLOSED HEAD SPACE ADJUSTMENT

The closed headspace adjustment bolt is located on the movable headpiece end plate. Refer to Item A.

3.2.3 OVERTRAVEL INERTIA LIMITING SCREW

The over-travel inertia limiting screw is located on the movable headpiece end plate. Refer to Item B.

3.2.4 OPEN HEAD SPACE ADJUSTMENT

The open headspace adjustment bolt is located on the upset mechanism opposite the over travel inertia limiting screw. Refer to Item C.

3.2.5 HIGH PRESSURE TRACEL STOP SCREW

The high-pressure travel stop screw is located on the upset mechanism, threaded into the upset lever arm and beneath the upset lever limiting bridge. Refer to Item D.

3.2.6 LOW PRESSURE TRAVEL LIMITING SCREW

The low-pressure travel limiting screw is located on the upset mechanism, threaded into the upset lever arm and beneath the upset lever limiting bridge. Refer to Item E.

3.2.7 LIMIT SWITCH ADJUSTING SCREW

The limit switch adjusting screw is located on the upset lever arm. Refer to Item F.

3.2.9 TOGGLE LINK

The toggle link is located in the middle of the upset mechanism. Refer to Item G.

3.2.10 UPSET LEVER LIMITING BRIDGE

The upset lever limiting bridge is located in the middle of the upset mechanism. Refer to Item H.

3.2.11 UPSET LEVER ARM

The upset lever arm is located in the middle of the upset mechanism. Refer to Item I.

4.0 BASIC OPERATING PARTS LOCATION

5.0 TYPICAL OPERATING SEQUENCE

All insulating materials must be removed from conductors where they contact lower welding dies.

5.1 Set weld heat selection switch to recommended chart setting.

5.2 Set upset pressure to recommended chart setting (PSI).

5.3 Adjust the head open space to proper chart setting.

5.4 Place the stock into welding dies so wire ends meet midway between each die. Clamp into position with foot valve pedals.

5.5 Lower the flash guard and lift the operating lever until it initiates the operation switch, hold for 1 to 3 seconds to assure a complete weld cycle.

5.6 Unclamp welded conductors.

5.7 Trim off weld burr so welded area is equal to parent material diameter. Incomplete burr removal or undercutting of the weld area will result in subsequent weld breaks.

6.0 SPECIAL ADJUSTMENTS (FIG. 2)

6.1 Item "A" is used for head closed space adjustment. This may have to be adjusted as die and shoe inserts wear, for this reason it's best to keep like size grooves in one die set. As the ends wear they can be used until an even amount takes place then adjust closed headspace again.

When replacing worn dies with new or rebuilt ones, turn bolt "A" in about ½" or 12.7mm to prevent ends from being damaged when adjusting new closed space.

To adjust new head closed space after new weld dies and clamp shoes have been installed. Lift hand operated air valve lever and hold in place with small wire through ears on valve body and hole in lever. Adjust bolt "A" until there is .005 to .010" to .127 to .254mm between inserts in ends of weld dies. Lock bolt "A" in place with locknut.

6.2 Item "E" head open space adjustments. This also adjusts the amount of low-pressure travel on the weld cycle.

6.3 Item "F" limit switch adjustment screw. This screw should be adjusted to where plunger on limit switch is pushed down into threaded tube ¼". This adjustment is made with nothing in welding dies and initiating the operating lever.

6.4 Item "G" toggle link. This changes the vertical motion of the upset lever to a horizontal movement.

6.5 Item "I" upset lever. This lever pivots at the rear with air cylinder pushing front end of lever up. Angle ground on front end of upset lever pushes against lazy arm roller moving welder headpieces together.

6.6 Item "H" upset lever-restricting bridge, which limits movement of upset lever.

6.7 AD-6, AD-8, & AD-10
ADJUSTMENTS AND DIE INSTALLATION

6.7.1 To prevent damage to dies or personal injury, disconnect power and reduce air pressure gauges to "O".

6.7.2 Loosen locknut on "closed" headpiece space adjusting screw and turn screw in approximately 3/8" to allow clearance between worn welding dies. Figure 1 and Designation "X".

6.7.3 Loosen locknut on "open" headpiece space adjusting screw and turn bolt counter clockwise to lower leverage bar. Figure 1 and Designation "Y".

6.7.4 Remove welding dies and clamp shoes.

6.7.5 Brighten with #2/0 emery cloth wipe clean:

A. Attaching surfaces of replacement welding dies – place on flat surface to brighten.
B. Attaching surfaces of replacement welding die shoes – place on flat surface to brighten.
C. Welding die seats on stationary and movable headpieces – file with care to eliminate pitted or burnt surfaces. Polish with emery cloth. (Note: Damaged die seats indicate poor installation procedures or loose welding dies).
D. Clamp arm die shoe seats – polish with emery cloth.
E. Wipe all contact surfaces with quick evaporating, low residue cleaner.

6.7.6 Install new welding dies (lower set), welding die shoes (upper set) and align.

A. Place clean welding dies in die seats and lightly tighten into position. (Note: Die sets are marked with a machining code).
B. Attach clean welding die shoes to clamp arms and lightly tighten into position.
C. Select a straight piece of rod that corresponds to one of the exact die grooves and place across and spanning welding dies to assist in alignment.
D. Adjust upset air regulator to approximately 10 psi and clamp aligning rod into place.
E. Tap welding dies and die shoes into best alignment and tighten upper die shoes.
F. Release clamp arms and carefully tighten welding dies.

6.7.7 Adjust upset air regulator to approximately 10 psi and activate operating lever, place the locking pin in topside of air operating lever to hold movable headpiece in this position. Adjust head "closed" adjusting screw to specifications shown in Figures 1 and 1A. Tighten locknut.

6.7.8 With adjustment #7 completed, leave headpiece in adjusted closed position and make following limit switch adjustments.

A. Mark stem of depressed limit switch with pencil as shown in Figure 1C.
B. Release operating lever to allow movable headpiece to return to a rest position.
C. Check pencil mark to specifications shown in Figures 1 and 1C. Adjust limit switch adjusting screw to obtain proper switch setting. Recheck if necessary. (Note: Important adjustment as it determines fusion point of a successful weld. Adjustment remains same for all sizes).

6.7.9 Headpiece open space may be checked by allowing movable head to return to rest position. Adjust head "open" adjusting screw to specifications in 1B.

6.7.10 Restore correct air pressures and power to welder.

6.7.11 Should the need arise to reset only the upset mechanism adjustments steps 4, 5 and 6 may be eliminated.

WELDER ADJUSTMENTS AND LUBRICATION (FIG. 1)

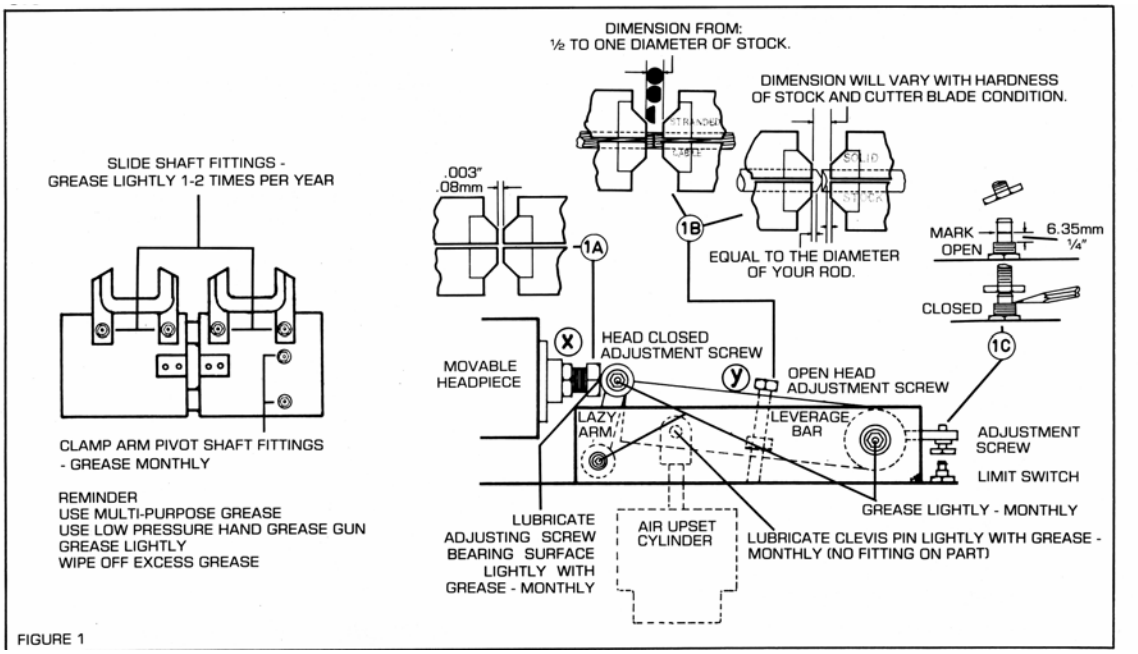
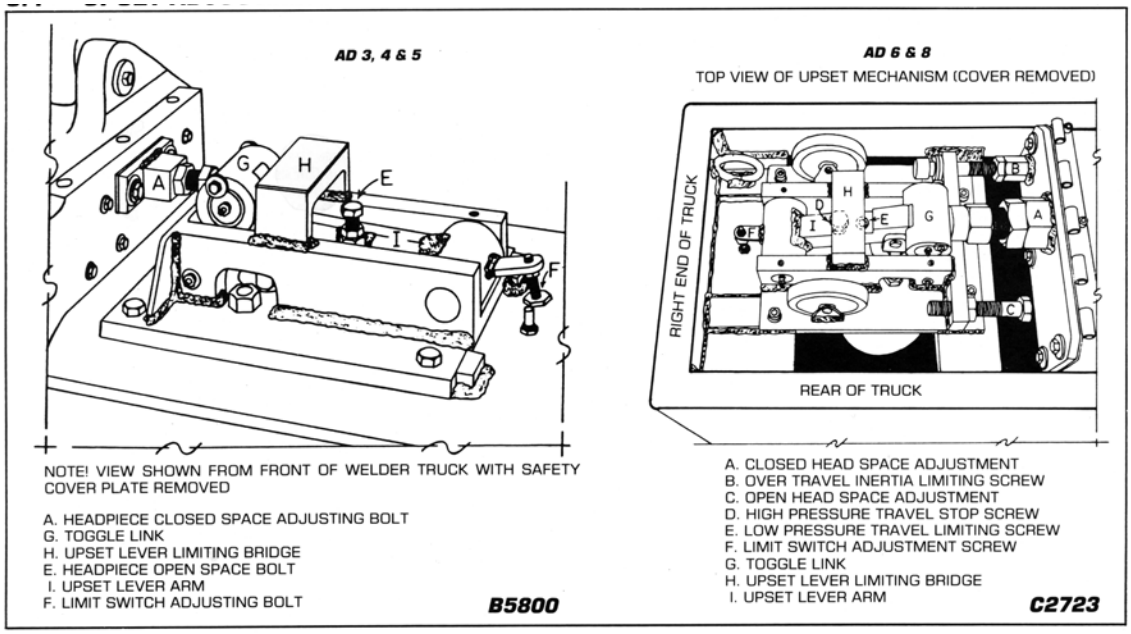


FIGURE 1

UPSET ADJUSTMENTS (FIG. 2)


AD 3, 4 & 5
A
G
H
E
I
F
NOTE! VIEW SHOWN FROM FRONT OF WELDER TRUCK WITH SAFETY COVER PLATE REMOVED
A. HEADPIECE CLOSED SPACE ADJUSTING BOLT
G. TOGGLE LINK
H. UPSET LEVER LIMITING BRIDGE
E. HEADPIECE OPEN SPACE BOLT
I. UPSET LEVER ARM
F. LIMIT SWITCH ADJUSTING BOLT
B5800
AD 6 & 8
TOP VIEW OF UPSET MECHANISM (COVER REMOVED)
RIGHT END OF TRUCK
REAR OF TRUCK
A. CLOSED HEAD SPACE ADJUSTMENT
B. OVER TRAVEL INERTIA LIMITING SCREW
C. OPEN HEAD SPACE ADJUSTMENT
D. HIGH PRESSURE TRAVEL STOP SCREW
E. LOW PRESSURE TRAVEL LIMITING SCREW
F. LIMIT SWITCH ADJUSTMENT SCREW
G. TOGGLE LINK
H. UPSET LEVER LIMITING BRIDGE
I. UPSET LEVER ARM
C2723

7.0 PREVENTIVE MAINTENANCE TECHNIQUE

Keep in Mind that these welders are precision built to last many years, but will require good maintenance procedures. They are designed to be as automatic as possible with a minimum dependence on the ability of the operator. Those must make adjustments thoroughly familiar with the operating principles of the welders.

7.1 WELDING DIE NOTES

7.1.1 Welding dies and die shoes in poor condition are the primary caused of bad welds.
7.1.2 Check die sets for excessive wear and replace if necessary.
7.1.3 Clean weld die bottoms to remove oxides with emery cloth placed on a flat surface.
7.1.4 Clean die seats with emery cloth to brighten contact areas.
7.1.5 After cleaning of dies be sure to wipe off with soft clean cloth.
7.1.6 Completely tighten dies into seats to assure a good contact.
7.1.7 Worn dies will not hold stock during a weld cycle, replace worn dies.

7.2 WEEKLY

7.2.1 Tighten all loose parts.
7.2.2 Check for water leaks (if applicable).
7.2.3 Check for air leaks.
7.2.4 Drain airline filter bowls.
7.2.5 Tighten all loose parts.

7.3 QUARTERLY

7.3.1 Repeat above service items.
7.3.2 Check grease requirements on clamp arms pivot shafts and lubrication points.
7.3.3 Check anneal parts and replace all worn or broken assemblies
7.3.4 Check contacts on magnetic contactor for worn contacts.
7.3.5 Clean heat switch contacts with low residue cleaner and recoat with petroleum jelly.

7.4 ANNUALLY

7.4.1 Repeat previously noted items.
7.4.2 Check for wear in clap arm pivots.
7.4.3 Clean inside and outside of welder.
7.4.4 Check grease requirements on headpiece slide shafts, grease lightly.
7.4.5 Caution: make sure that power supply is disconnected before servicing welder in anyway!

7.5 WELDING DIES AND DIE SHOES INFORMATION

Description:
Welding dies – Lower conducting electrode and clamp jaw.
Welding die shoes – Upper clamping member.
Welding dies and die shoes in poor condition are the main causes of bad welds.
Care of die sets:

7.5.1 Use a brass or fiber blade to remove particles of flashings that build-up on die sets. Excessive flash build-up causes die burns on material and shorting of die sets.

7.5.2 Do not attempt to clamp material that is not suited for welder into die sets. Undersize materials will slip and burn die grooves, oversize materials will overstress clamping parts.

7.5.3 Do not use welding die sets for a vise. These parts will not withstand the mechanical abuse.

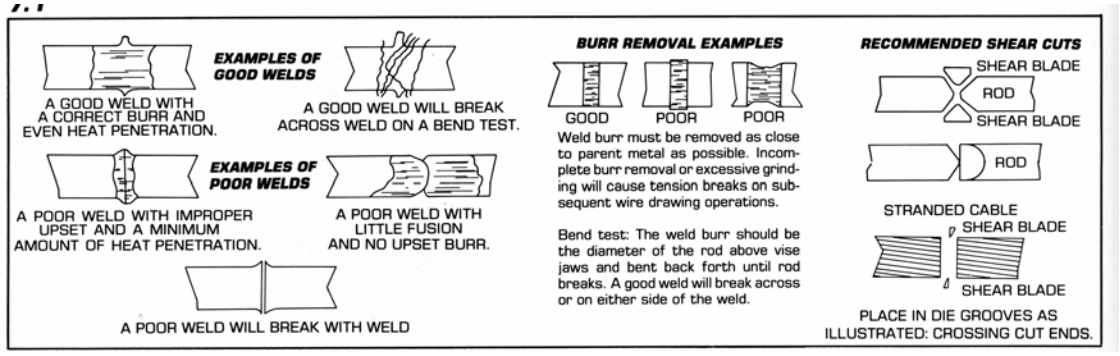
7.5.4 Whenever welding dies are replaced, clean bottoms of dies and corresponding die seats to a bright and clean condition before bolting them tightly into place. An oxidized surface will insulate the welding dies and reduce effective welding voltage.

7.5.5 Welding die set will wear with use and must be changed occasionally for good welding results. Keep and adequate supply of replacement parts available. Wire and rod slippage is a problem caused by poor die sets and a major cause of wire breaks.

8.0 SUGGESTED SETTINGS

Material	Size	Weld Heat Setting	Die Closed Space	Die Open Space	Upset Pressure	Clamp Pressure	Limit Switch Setting	Upset Arm Movement
Model AD-6								
Stranded Material								
Aluminum	.565	6 or 7	1/32	5/8	30 psi	100 psi	5/16	1
Copper	.565	5	1/32	5/8	30 psi	100 psi	5/16	1
Aluminum	.670	5	1/32	¾	30 psi	100 psi	5/16	1
Copper	.670	4	1/32	¾	30 psi	100 psi	5/16	1
Aluminum	.795	4	1/32	13/16	30 psi	100 psi	5/16	1
Copper	.795	3	1/32	13/16	30 psi	100 psi	5/16	1
Aluminum	.985	3	1/32	7/8	35 psi	100 psi	5/16	3
Copper	.985	3	1/32	7/8	35 psi	100 psi	5/16	3
Aluminum	1.140	2	1/32	15/16	40 psi	100 psi	5/16	3
Copper	1.140	1	1/32	15/16	45 psi	100 psi	5/16	3
Aluminum	1.1275	2	1/32	1	45 psi	100 psi	5/16	3
Copper	1.1275	1	1/32	1	50 psi	100 psi	5/16	3
Solid Material								
Copper	½	4	1/32	13/16	30 psi	100 psi	5/16	1
Copper	¾	2	1/32	7/8	40 psi	100 psi	5/16	1
Copper	1	2 or 1	1/32	1	45 psi	100 psi	5/16	3
Aluminum	5/8	5	1/32	13/16	30 psi	100 psi	5/16	1
Aluminum	¾	3	1/32	7/8	40 psi	100 psi	5/16	1
Aluminum	1 1/8	2	1/32	1	45 psi	100 psi	5/16	3
Model AD-8								
Copper	5/8	60%	1/32	11/16	30 psi	100 psi	5/16	3
Copper	¾	70%	1/32	13/16	30 psi	100 psi	5/16	3
Copper	7/8	70%	1/32	7/8	35 psi	100 psi	5/16	2
Copper	1	75%	1/32	7/8	35 psi	100 psi	5/16	2
Copper	1 1/8	80%	1/32	1	40 psi	100 psi	5/16	2
Copper	1 ¼	95%	1/32	1 1/16	45 psi	100 psi	5/16	2
Aluminum	.783	60%	1/32	13/16	30 psi	100 psi	5/16	3
Aluminum	.903	70%	1/32	7/8	30 psi	100 psi	5/16	3
Aluminum	.962	70%	1/32	7/8	30 psi	100 psi	5/16	2
Aluminum	1.114	70%	1/32	1	35 psi	100 psi	5/16	2
Aluminum	1.333	75%	1/32	1	35 psi	100 psi	5/16	2

8.1 WELD EXAMPLES


EXAMPLES OF GOOD WELDS
A GOOD WELD WITH A CORRECT BURR AND EVEN HEAT PENETRATION.
A GOOD WELD WILL BREAK ACROSS WELD ON A BEND TEST.
EXAMPLES OF POOR WELDS
A POOR WELD WITH IMPROPER UPSET AND A MINIMUM AMOUNT OF HEAT PENETRATION.
A POOR WELD WITH LITTLE FUSION AND NO UPSET BURR.
A POOR WELD WILL BREAK WITH WELD
BURR REMOVAL EXAMPLES
GOOD
POOR
POOR
Weld burr must be removed as close to parent metal as possible. Incomplete burr removal or excessive grinding will cause tension breaks on subsequent wire drawing operations.
Bend test: The weld burr should be the diameter of the rod above vise jaws and bent back forth until rod breaks. A good weld will break across or on either side of the weld.
RECOMMENDED SHEAR CUTS
SHEAR BLADE
ROD
SHEAR BLADE
ROD
STRANDED CABLE
SHEAR BLADE
SHEAR BLADE
PLACE IN DIE GROOVES AS ILLUSTRATED: CROSSING CUT ENDS.

9.0 DIAGNOSTIC CHART FOR TROUBLE SHOOTING

Welding Action	Cause	Remedy
Welding action normal burr does not extend beyond rod	Shear cut	Increase stating space
Molten metal blown out and material does not join	High heat	Lower heat setting
	Limit switch adjust	Set to depress ¼"
	Small stock	Check nameplate rating
	Low upset pressure	Increase upset pressure
	Air system	Clean air filters
Weld area does not heat enough to complete weld	Low heat	Increase heat settings
	Transformer secondary connection	Clean and tighten
	Welding dies	Clean and tighten
	Staring space	Decrease starting space
Dry looking weld	Upset pressure	Decrease settings
	Limit switch	Set to depress ¼"
Misalignment of rod	Worn die grooves	Replace die sets
	Starting space	Decrease staring space
	Welder head loose	Return for reconditioning
Rod ends buckle and not welded	Weld heat	Increase heat
	Starting space	Decrease starting space
	Upset pressure	Decrease pressure
	Welding dies	Clean or replacement
Welder inoperative	Fuses	Check power supply
	Time delay switch	Check continuity of circuits
	Operating or limit switch	Check continuity of circuits
	Heat switch	Tighten loose connections
	Contactor	Check continuity of circuits
	Welding transformer	Check continuity of circuits
	Auto-transformer	Check continuity of circuits
Variations in welds	Stock slippage	Undersize stock
		Replace worn dies
		Set clamp pressure to 90 psi
		Leaking clamp cylinder
	Input voltage	Check power input
		Only 5% drop permissible
		Inadequate wiring
	Loose transformer secondary	Clean and tighten
	Loose welding dies	Clean and tight or replace
	Binding movable headpiece rod connection	Remove all rod ends
		Clean contact area
	Preparing rod end	Replace rod cutter jaws
		Require consistent cuts
	Weld contactor	Replace contacts and check operation
	Time delay switch in weld circuit	Increase air stabilization time-install timer on early units

9.1 ELECTRICAL TROUBLE-SHOOTING OF WELDER

(Caution!! Extreme care should be exercised when making these tests. Dangerous voltages are present in the welder. Only persons familiar with electrical safety precautions should perform these tests.)

9.1.1 TROUBLE-SHOOTING TABLE (See section 9.1.3)

This electrical trouble-shooting table is furnished as a suggested method of trouble-shooting the welder. The individual steps of the table should be performed in the order given, to make the tests valid. The electrical schematic (section 10) furnished for these tests show the table test points. The table may be used for welders with a different but closely related wiring by using corresponding test points. During all tests, line voltage should be connected to L1 & L2 of the welder. The heat switch should be set to the #1 position.

9.1.2 FINAL ELECTRICAL CHECKS

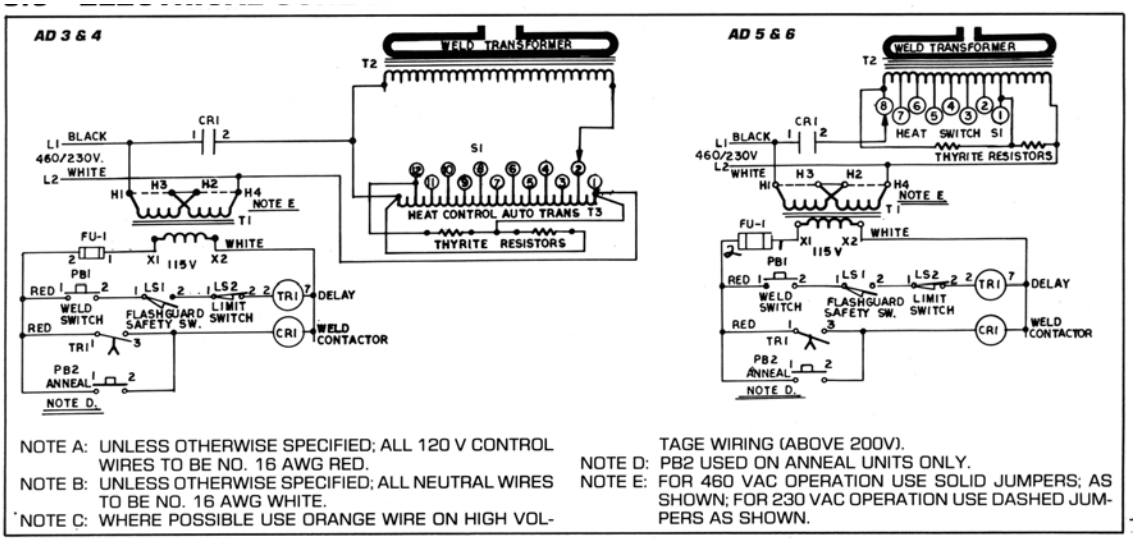
Set the heat switch to the number 1 position, connect the voltmeter across the welding dies. Press the operating switch. The meter reading will typically be less than 10 VAC. Consult the weld specification sheet for this value. Rotate the heat switch through all settings. If the voltage is not read at any setting, the heat switch may be defective. Actuate the weld limit switch; observe the reading goes to zero. Release the weld limit and operating switches, the reading should remain at zero.

9.1.3

TEST LEAD CONNECTION	METER READING	PROBLEM IF NO READING	PRESS OPERATING SWITCH	WELD LIMIT SWITCH ACTUATED	PRESS ANNEAL SWITCH
X1 X2	115 VAC	Bad control transformer			
X2 FU1-1	115 VAC	Bad fuse connection			
X2 FU1-2	115 VAC	Open fuse			
X2 PB1-1	115 VAC	Open wire to operating switch			
X2 PB1-2	115 VAC	Bad operating switch	X		
X2 LS1-2	115 VAC	Open flashguard switch	X		
X2 LS2-1	115 VAC	Open wire to weld limit switch	X		
X2 LS2-2	115 VAC	Open weld limit switch	X		
X2 PB2-1	115 VAC	Open wire to anneal switch			
X2 PB2-2	115 VAC	Bad anneal switch			X
X2 TR1-3	115 VAC	Bad time delay relay	X		
L2 CR1-1	Line voltage	Open wiring to contactor			
L2 CR1-2	Line voltage	Bad contactor	X		

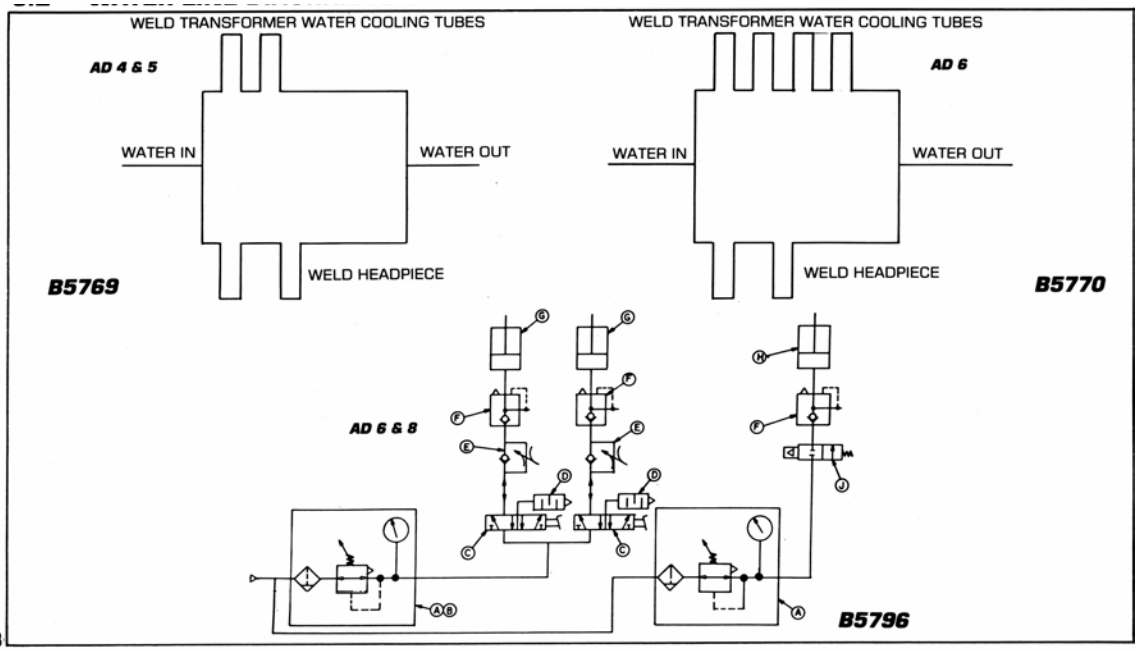
NOTE: To perform repair consult section 13 for parts identification.

10.0 ELECTRICAL SCHEMATIC



NOTE A: UNLESS OTHERWISE SPECIFIED; ALL 120 V CONTROL WIRES TO BE NO. 16 AWG RED.
NOTE B: UNLESS OTHERWISE SPECIFIED; ALL NEUTRAL WIRES TO BE NO. 16 AWG WHITE.
NOTE C: WHERE POSSIBLE USE ORANGE WIRE ON HIGH VOLTAGE WIRING (ABOVE 200V).
NOTE D: PB2 USED ON ANNEAL UNITS ONLY.
NOTE E: FOR 460 VAC OPERATION USE SOLID JUMPERS; AS SHOWN; FOR 230 VAC OPERATION USE DASHED JUMPERS AS SHOWN.

10.1 PNEUMATIC SCHEMATIC



11.0 SAFETY REMINDERS

The following accident prevention information is presented to eliminate potential hazards while operating, inspecting or repairing Micro-Weld electric resistance welding equipment.

Important safety compliance information for Micro-Weld Welders.

GENERAL

1. Qualified personnel, prior to using equipment, must instruct an operator on basic operation and malfunction methods.
2. Safety eyeglasses must be worn by all personnel operating or servicing welders.
3. Use safety equipment properly and keep safety equipment on welders.
4. Determine that both operating voltages and hertz (cycles) of power supply correspond to ratings listed on welder nameplate located on welder housing.
5. Check nameplate ratings and keep within capacities and material categories stated therein.
6. Adjustments or repairs must be made by persons thoroughly familiar with operating principles of welder.
7. Welder must be disconnected from power supply prior to maintenance or repair procedures.

ELECTRICAL

1. Refer to National Electrical Code and local regulations for adequate electrical wiring to power welder. Do not operate welder with inadequate electrical power supply cords or cable.
2. All welders must be grounded through power supply and welder ground connection terminal securely tightened.
3. All welders must be able to be disconnected from power source either by a double breaking disconnect switch or unplugged by standard rated plugs.
4. All welders must be fused to prevent injury should an electrical malfunction occur. Welders must never be fused for an ampere load that exceeds the ratings stated on welder nameplate. Normally welders are fused using the nameplate rated load; time lag parameters functional to standard fuses allow this specification.
5. Electric power cords to welder must be kept in good condition. Report any damage or potential hazards to maintenance personnel.
6. The weld heat selection switch, potentiometer or range selection devices must not be changed to a new position while a weld operation is in process.

12.0 BUYERS GUIDE

HOW TO ORDER PARTS:

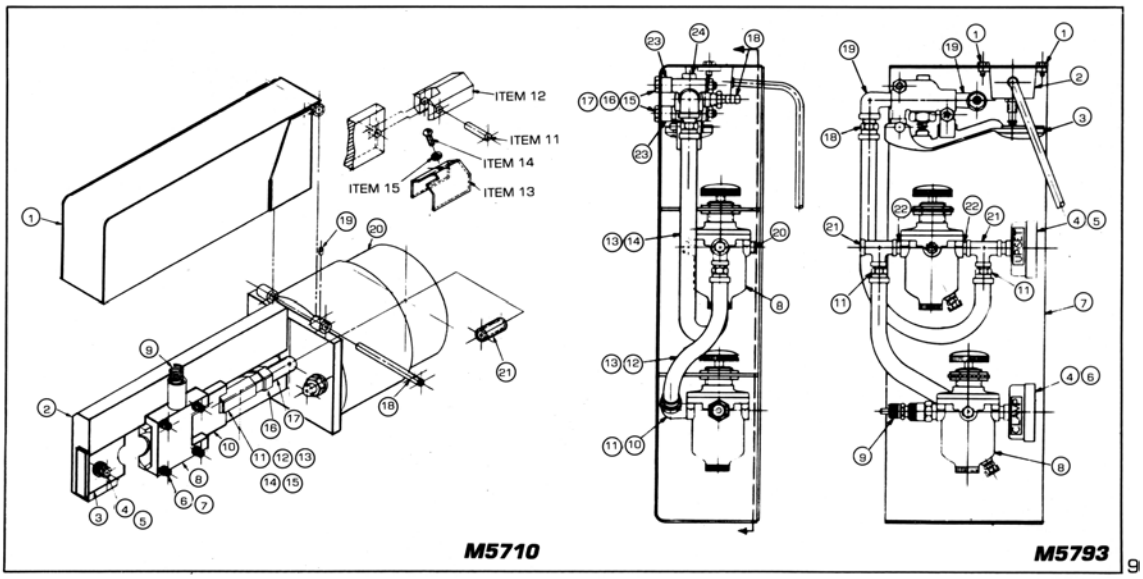
You must provide
1. Machine Model
2. Machine Serial Number
3. Voltage

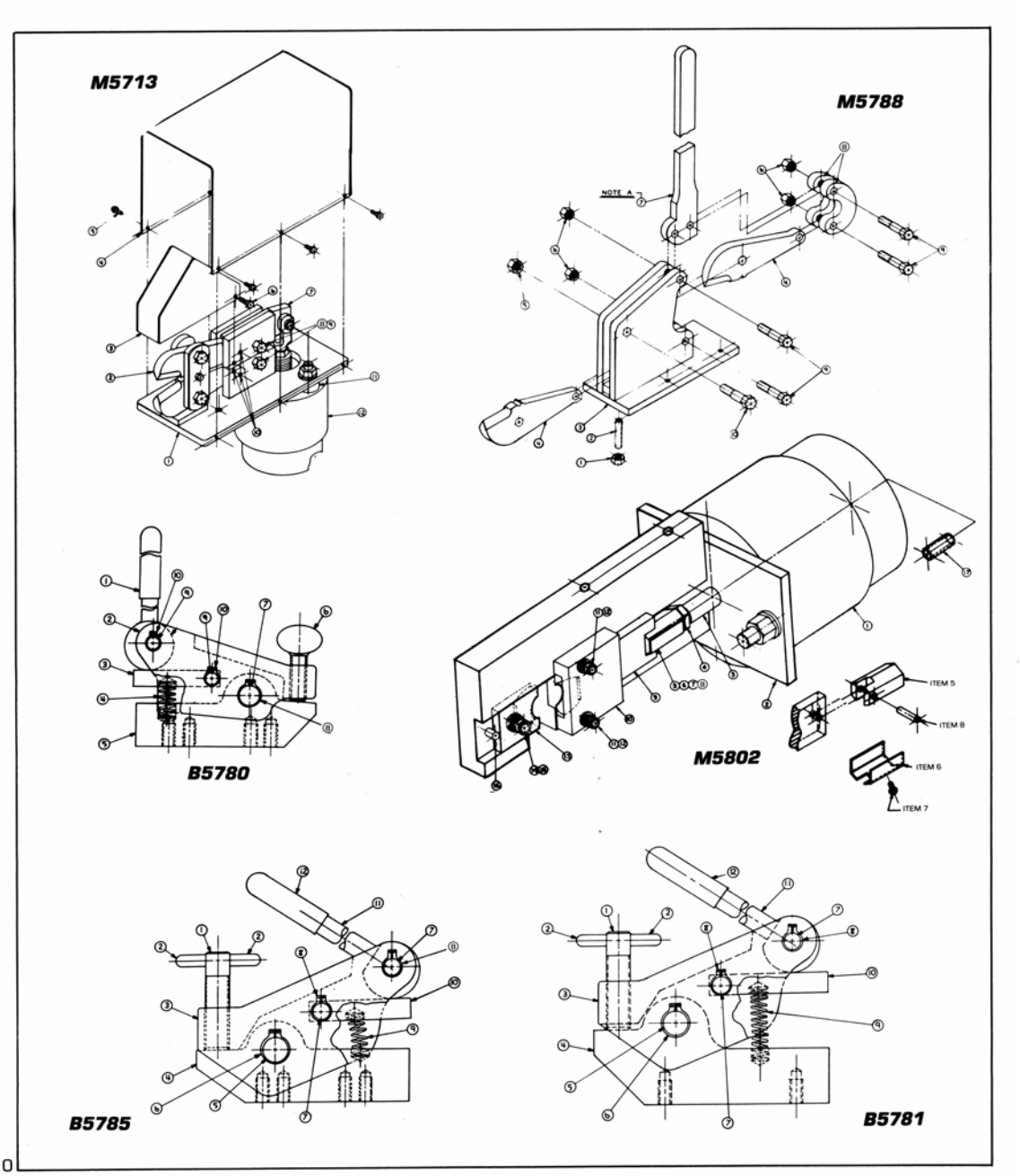
Then identify part(s) on part list (last page in book) and provide MICRO with the circled number.

CALL MICRO at 800-872-1068
OR FAX MICRO at 630-787-9360

Provide MICRO with your company name and purchase order number.

13.0 PARTS LIST




M5713
M5788
NOTE A
B5780
M5802
ITEM 5
ITEM 8
ITEM 6
ITEM 7
B5785
B5781

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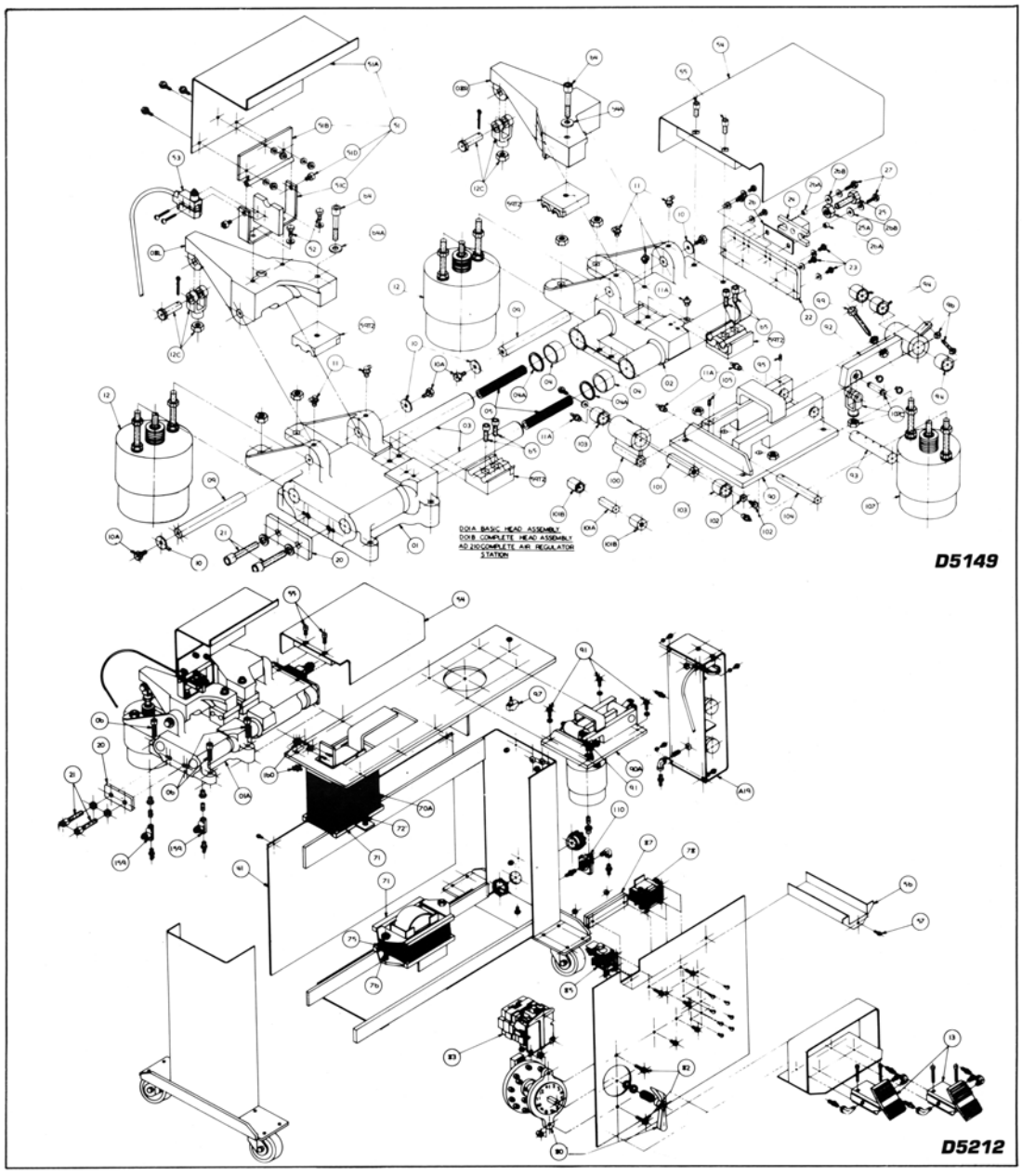

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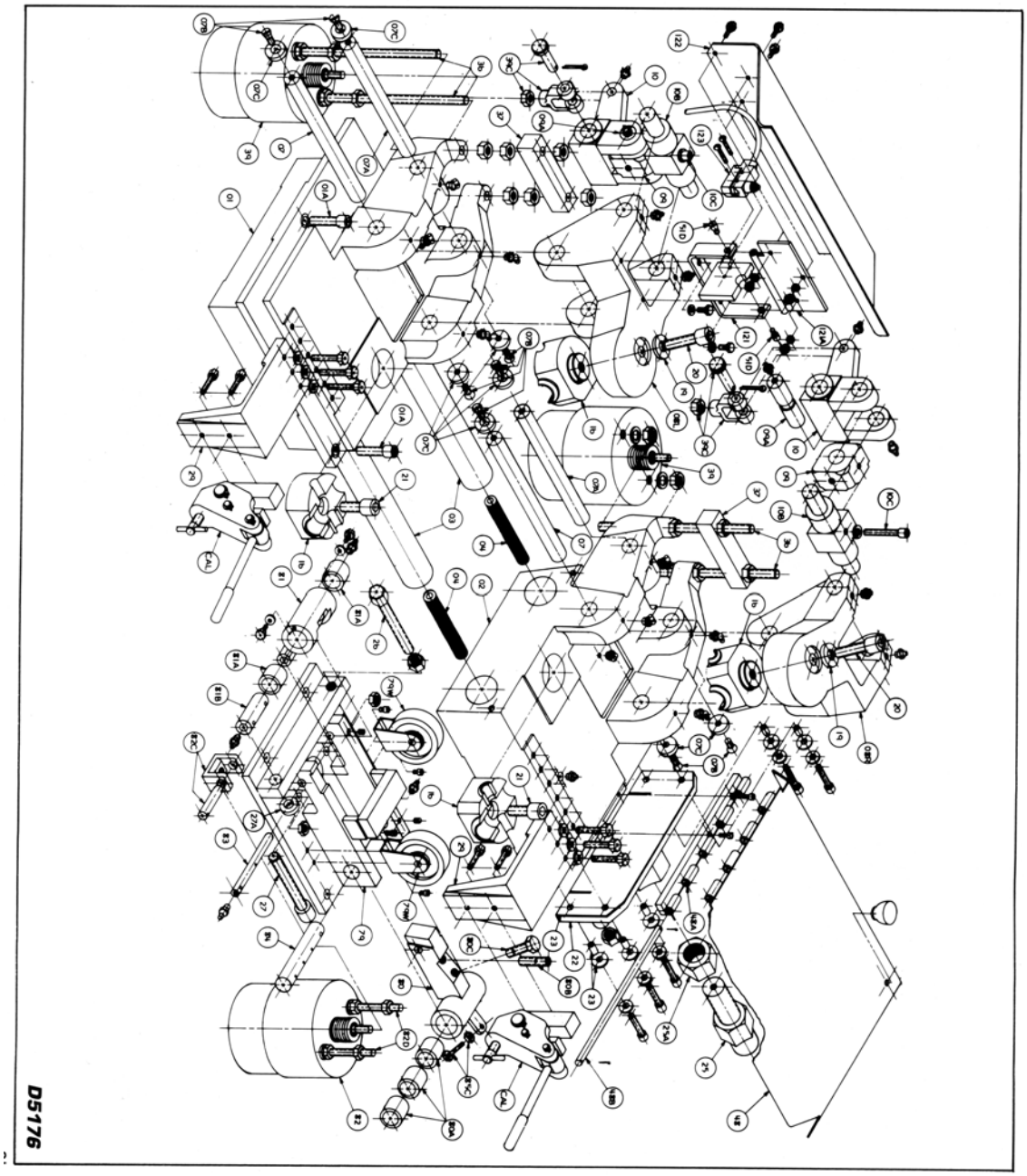
DS176

PARTS LIST AD6 – AD8		
MODEL/ PART NO	**DESCRIPTION**	**ITEM #**
D-01A	Stationary head attaching bolts	90683
D-01B	Basic head assembly, AD6	30062
D-01D	Basic head assembly, AD8	30063
D-04	Head return spring	80059
D-07	Clamp arm pivot	30014
D-07A	Bell crank pivot	30015
D-07B	Clamp arm pivot screw & washer	30005
D-08	Clamp arm for stationary head, left	30037
D-08A	Clamp arm for movable head, right	30038
D-09	Clamp eccentric leveling block	70005
D-09A	Leveling block pin	70006
D-10	Bell crank	70007
D-10A	Bell crank block pin	70010
D-10B	Bell crank block	70004
D-10C	Bell crank retaining screw	90665
D-10D	Bell crank block assembly	70012
D-16	Welding die set, new style	30029
D-16A	Welding die set, old style	30024
D-19	Upper die attaching screw washer	30006
D-20	Upper die attaching screw	90691
D-21	Lower die attaching screw	90690
D-22	Upset plate steel	40006
D-23	Upset plate insulation	30007
D-24	Secondary shunt	50002
D-24A	Shunt clamp plate	50000
D-24B	Shunt attaching screw, long	90501
D-24C	Shunt attaching screws, short	90502
D-25	Closed space adjustment screw	30042
D-25A	Closed space locknut	92111
D-26	Open space adjustment screw	30000
D-27	Head closed stop screw	90696
D-27A	Head closed stop screw washer	30001
D-28	Upset plate attaching screws	90658
D-29	Anneal clamp bracket (CAL anneal clamps)	30058
D-30	Weld transformer, AD6	50009
D-31	8 tap primary coil	50010
D-32	Transformer secondary	30043
D-33	Transformer (H.D.) not taps, AD8	50009
D-34	Primary coil	50010
D-35	Secondary	30043
D-36	Clamp cylinder stud, AD6	70001
D-36A	Clamp cylinder stud, AD8	70011
D-37	Clamp link stop block, AD6	70002
D-37A	Clamp link stop block, AD8	70003
D-38	Clamp cylinder for AD8, 50-6	77707
D-38A	Clamp cylinder diaphragm, 50-6	77714

PARTS LIST AD6 – AD8		
MODEL/ PART NO	**DESCRIPTION**	**ITEM #**
D-38B	Clamp cylinder boot, 50-6	77719
D-39	Clamp cylinder for Model AD6, 50-4	77706
D-39A	Clamp cylinder diaphragm, 50-4	77713
D-39B	Clamp cylinder boot, 50-4	77718
D-39C	Clamp cylinder clevis	70009
D-48	Upset cover	40021
D-79	Upset frame	40014
D-79A	Upset attaching bolts	90671
D-80	Leverage bar	40011
D-80A	Lever bearings	48404
D-80B	Lever down stop screw	30003
D-80C	Lever up stop screw	30004
D-81	Toggle mechanism	30012
D-81A	Toggle mechanism bearings	48404
D-81B	Air upset cylinder boot	77719
D-82	Air upset cylinder, 50-6	77707
D-82A	Air upset cylinder diaphragm	77714
D-82B	Air upset cylinder boot	77719
D-82C	Air upset cylinder clevis & pin	70013
D-82D	Cylinder stud & 3 nuts	70014
D-83	Toggle mechanism pivot pin	30009
D-84	Leverage bar pivot	30010
D-85	Limit switch only	57806
D-85A	Limit switch actuator	57814
D-85C	Limit switch adjusting screw	53005
D-90A	8 point tap switch	57857
D-91	Quick exhaust valve	77857
D-99	Weld delay timer	57661
D-102	Welder frame complete	40039
D-104	Step down control transformer	57602
D-105	Air valve	77859
D-106	Standard vise 400R	78111
D-107	Bracket for standard vise	60022
D-108	Vise, heavy duty	78112
D-109	Bracket for heavy duty vise	60005
D-111	Control terminal block	53000
D-112	Discharge resistors (Thyrite)	58132
D-113	Weld contactor, AD-6	57615
D-114	Weld contactor housing	58203
D-120	Ignitron contactor (0-6000 tubes) w/phase shift heat control, price applicable	57744
D-121	Flash guard bracket	30519
D-121A	Flash guard pivot plate	30639
D-122	Flash guard aluminum	30002
D-122A	Complete flashguard assembly less switch	30656
D-123	Flash guard safety switch	57813

D-124	6” angle iron track type wheels (stationary)	Application
D-125	Flow control valve	77862
D-126	Stationary mount each	40018
D-130	X-CAL anneal, screw type, pair	30066
A-19	Air frame complete	59510
D-131	Muffler	77892